

ABSTRACT OF THE DISCLOSURE

A fast, texture morphing algorithm for real-time computer simulation and video games dynamically generates objects "on the fly" by simplifying and reducing the computational load required for a texture morphing/blending process. Incremental interpolation techniques compute a morph parameter based on previous value and morph change rate. Precomputed initial and incremental morph parameter values for each texel component are applied during real-time morphing procedures using integer arithmetic. Approximation errors are reduced by incrementing/decrementing by an extra integer value when the number of morph iterations is a multiple of a frame counter. The frame counter avoids over-runs, and the morphing procedure is "snapped" the texel value to the precise texture target value to prevent under-runs and corresponding artifacts. Interlacing (applying interpolation to a subset of the texels each frame) significantly reduces computational load without introducing significant image artifacts. The morph texture buffer data structure is initially decomposed off-line to reduce the number of real-time calculations required to manipulate texel component data.